

## Technical data sheet

### Safety relay

Part no.: 50133005

MSI-SR-LC31AR-03

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For illustration purposes only



## Technical data

### Basic data

Series	MSI-SR-LC31
Application	E-Stop circuits Optoelectronic protective devices Position switches (mechanical contacts) Solenoid switches (reed contacts, equivalent) Transponder switches (OSSD outputs)

### Functions

Functions	Cross circuit monitoring
Restart	Automatic

### Characteristic parameters

SIL	3, IEC 61508
SILCL	3, IEC/EN 62061
Performance Level (PL)	e, EN ISO 13849-1
PFH <sub>D</sub>	3E-08 per hour
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1
Category	4, EN ISO 13849-1

### Electrical data

Continuous current per current path, max.	8 A
<b>Performance data</b>	
Supply voltage U <sub>B</sub>	24 V, AC/DC, -15 ... 10 %
Power consumption, max.	1.6 W
<b>Supply circuit</b>	
Nominal voltage U <sub>N</sub>	24 V
Nominal frequency	50 ... 60 Hz
Rated control supply voltage U <sub>S</sub> at AC 60 Hz	20.4 V
Rated control supply voltage U <sub>S</sub> at AC 50 Hz	26.4 V
Max. rated control supply voltage at AC 50 Hz	26.4 V
Min. rated control supply voltage U <sub>S</sub> at AC 50 Hz	20.4 V
Min. rated control supply voltage U <sub>S</sub> at DC	20.4 V
Max. rated control supply voltage at DC	26.4 V
Min. rated control supply voltage at DC	20.4 V
Rated power AC	2.9 V·A
Rated power DC	1.6 W
Galvanic isolation between supply and control circuit	Yes (when U <sub>N</sub> ≥ AC 42-48 V, AC 115-230 V, AC 230 V)

### Output circuit

Number of outputs, safety-oriented, non-delayed, contact-based	3 Piece(s)
Number of outputs, safety-oriented, delayed, contact-based	0 Piece(s)
Number of outputs, signaling function, non-delayed, contact-based	1 Piece(s)
Release current paths	NO
Signaling current paths	NC
Contact material	Ag alloy, gold-plated
Usage category AC-15 (NO contact)	Ue 230V, Ie 3A
Usage category DC-13 (NO contact)	Ue 24V, Ie 3A
Short circuit protection (NO contact)	gG class safety fuse 6A, melting integral
Nominal switching voltage, release current paths AC	230 V
Nominal switching voltage, signaling current paths AC	230 V
Max. thermal continuous current I <sub>th</sub> , release current paths	8 A
Max. thermal continuous current I <sub>th</sub> , signaling current paths	5 A
Max. total current I <sup>2</sup> of all current paths	25 A <sup>2</sup>
Mechanical life time	100,000,000 switching cycles

### Control circuit

Evaluation of the inputs	Two-channel
Nominal output voltage DC	24 V
Input current at the control inputs (safety circuit/reset circuit)	25 mA
Max. peak current at the control inputs (safety circuit/reset circuit)	100 mA
Max. cable resistance, per channel	≤ (5 + (1.176 × U <sub>B</sub> / U <sub>N</sub> - 1) × 100) Ω
Minimum switch-on time	100 ms
Response time (automatic start t <sub>A2</sub> )	350 ms
Response time (manual start t <sub>A1</sub> )	350 ms
Test pulse time permitted t <sub>TP</sub>	1 ms
Release time t <sub>R</sub>	10 ms
Recovery time t <sub>W</sub>	750 ms

### Time behavior

Regression delay	10 ms
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### Connection

Number of connections	1 Piece(s)
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#### Connection 1

Function	Signal IN Signal OUT Voltage supply
Type of connection	Terminal
Type of terminal	Spring-cage terminal
No. of pins	16 -pin

#### Cable properties

Connection cross sections	2 × 0.2 to 1.5 mm <sup>2</sup> , wire 2 × 0.2 to 1.5 mm <sup>2</sup> , wire 2 × 0.25 to 1.5 mm <sup>2</sup> , wire with wire-end sleeve
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## Technical data

### Mechanical data

Dimension (W x H x L)	22.5 mm x 106.5 mm x 114 mm
Net weight	210 g
Housing color	Gray
Type of fastening	Snap-on mounting

### Environmental data

Ambient temperature, operation	-25 ... 65 °C
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### Certifications

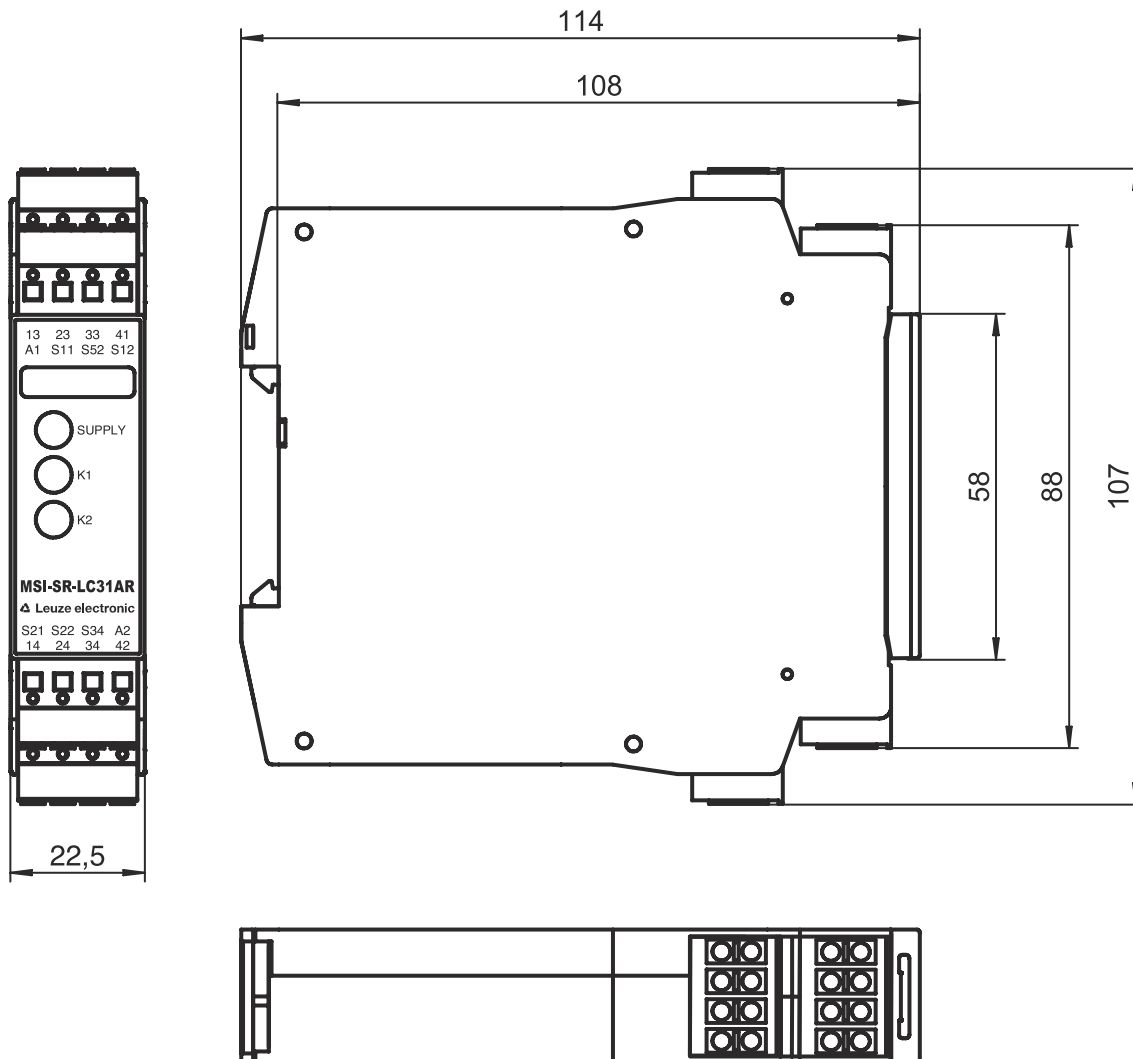
Approvals	c UL US
	TÜV Rheinland

### Classification

Customs tariff number	85364900
ECLASS 5.1.4	27371800
ECLASS 8.0	27371819
ECLASS 9.0	27371819
ECLASS 10.0	27371819
ECLASS 11.0	27371819
ECLASS 12.0	27371819
ECLASS 13.0	27371819
ECLASS 14.0	27371819
ECLASS 15.0	27371819
ECLASS 16.0	27371819
ETIM 5.0	EC001449
ETIM 6.0	EC001449
ETIM 7.0	EC001449
ETIM 8.0	EC001449
ETIM 9.0	EC001449
ETIM 10.0	EC001449
UNSPSC 26.08	32151800

# Dimensioned drawings

All dimensions in millimeters



## Electrical connection

### Connection 1

Function	Signal IN Signal OUT Voltage supply
Type of connection	Terminal
Type of terminal	Spring-cage terminal
No. of pins	16 -pin

### Terminal

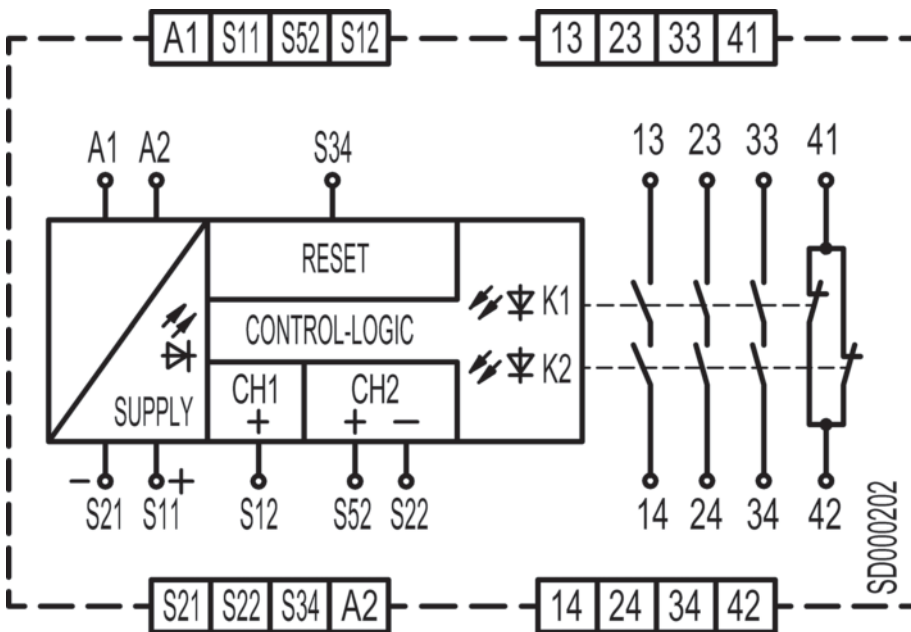
### Assignment

13	Release current path 1 (NO contact)
14	Release current path 1 (NO contact)
23	Release current path 2 (NO contact)
24	Release current path 2 (NO contact)
33	Release current path 3 (NO contact)

## Electrical connection

Terminal	Assignment
34	Release current path 3 (NO contact)
41	Signaling current path (NC contact)
42	Signaling current path (NC contact)
A1	+24 V
A2	GND
S11	Control circuit 1
S12	Control circuit 1
S21	Control circuit 2
S22	Control circuit 2
S34	Control circuit of reset button
S52	Control circuit 2

## Circuit diagrams



## Notes

**⚠ Observe intended use!**

- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with its intended use.